# REMARKS

Applicant notes with appreciation the indication of allowability of claims 3-8.

The Examiner objected to the Abstract of the Disclosure on the grounds that the word count was below the lower end of the range of 50 to 150 words and that it used the word "comprises". The Abstract has been amended in an attempt to overcome these objections. The Abstract has been rewritten to provide a word count within the range mentioned by the Examiner and to replace the word "comprises" by the word –includes– as suggested by the Examiner. A replacement Abstract page containing the new abstract is submitted herewith.

Claim 1 has been amended in order more clearly and succinctly define the invention. In the preamble, the word "parameters" has been replaced by the term "signal parameters" in order to clearly indicate that the invention is concerned with signal parameters as opposed to other types of parameters. In the generating clause, the word "using" has been replaced by the term "that consist of" in order to indicate that the data signals do not include bits other than those which form the predetermined data sequences.

## *Claim Rejections - 35 U.S.C. 102*

Claims 1, 2 and 9-11 have been rejected under 35 U.S.C. 102(b) as being anticipated by Applicant's prior United States Patent 6,211,803 (Sunter). Applicant respectfully submits that Sunter fails the well established test for anticipation. Sunter is concerned with a different problem from that of the present invention. Further, the method disclosed by Sunter is not the method disclosed and claimed in the present application and does not solve the problem Applicant seeks to solve in the present application. Reconsideration is respectfully requested in light of the following comments.

### *The Present Invention*

The present invention seeks to provide a method of determining signal parameters of high speed data signals and which does not require automated test equipment (ATE) to operate at the high data rates of the signals under test. Examples of signal parameters of interest are waveform amplitude, i.e., the difference between two logic levels; the difference between effective rise and fall transition times; and, rise and fall transition times, as illustrated in Fig. 6 and 7 of the drawings of the present application. Because of the difficulty of measuring parameters of such signals, the conventional method of testing circuits which transmit or receive high frequency signals only confirms that a signal is being transmitted or received. This test is inadequate because a circuit may be defective even though the circuit may "pass" this test.

The present invention provides a simple and elegant solution to this difficult problem. The method involves generating data signals which consist of predetermined data sequences, measuring the average voltage of the generated data signals, and then deducing the signal parameters of interest from the measured average voltages. These method steps are reflected in claim 1. Paragraph 36 of the present specification describes a predetermined data sequence. As explained in Applicant's specification, an important advantage of the method of the present invention is that it not only allows parametric testing of high frequency signals, it does so using only low frequency test circuitry, and, therefore, it does not require an ATE to operate at the high data rates of the signals being tested.

### *Sunter United States Patent 6,211,803*

The rejection of claim 1 is based on Claim 1 of Sunter. The Examiner asserts that claim 1 of Sunter "discloses a method of deducing parameters of data signals". Applicant respectfully disagrees. The preamble of Sunter claim 1 reads: "A test circuit for measuring a switching point voltage of an N-bit analog-to-digital converter (ADC)

having an analog input and a digital output". Thus, the claim is not directed to a method. More importantly, the preamble does not mention "signal parameters of data signals". A switching point voltage is a characteristic of ADCs. It is not a parameter of data signals. Applicant respectfully submits that this basis of rejecting claim 1 can only be made by a stretched construction of Sunter claim 1 based on hindsight in view of Applicant's specification. It is well established that this basis of rejection is improper.

In general, Sunter claim 1 provides test circuit that includes a digital comparator, an analog averging circuit a a digital averaging circuit. The comparator compares the output of an ADC against a predetermined digital value and produces comparison results in the form of first and second logic values. The analog averaging circuit averages the comparison results to produce an analog signal which is applied to the input of the ADC. The digital averaging circuit also averages the comparison results but generates a digital averaging value representative of the desired switching point voltage. There is no mention of generating data signals or data signals that consist of predetermined data sequences, measuring the average voltage of the generated data signals themselves and then deducing signal parameters of interest from the measured average voltages.

The first step of rejected claim 1 relates to "generating data signals that consist of predetermined data sequences".

The Examiner relies on the first clause of Sunter claim 1 (col. 13, lines 22-28) to anticipate the generating step of rejected claim 1. The first clause of Sunter claim 1 calls for a "digital comparator" which compares a digital output value from the digital output of the ADC to a predetermined digital value and generates a first logic value when the digital output value is less than the predetermined value and a second logic value when the digital output value is equal to or greater than the predetermined value. The first and second logic values cannot be predetermined and the terms are not used with reference to a parameter of a data signal.

The Examiner has not explained which of the signals of Sunter claim 1 correspond to the "data signals" generated in rejected claim 1. The Examiner has also not shown how any of such signals "consist of predetermined data sequences", since

there is no mention of "predetermined data sequences" in Sunter claim 1. Neither the outputs of the ADC nor those of the comparator can be considered to be "predetermined data sequences". Quite to the contrary, the signals in Sunter are un-deterministic, i.e., not predetermined. Furthermore, the generating clause of rejected claim 1 does not involve any comparison of signals as required by Sunter. Thus, claim 1 of Sunter cannot be considered to anticipate the generating clause of rejected claim 1.

The Examiner relies on the second clause of Sunter claim 1 (col. 13, lines 29-34) as the basis for anticipating the "measuring" step of rejected claim 1. The second clause of Sunter claim 1 calls for "an analog averaging circuit" which averages voltages of the first and second logic values (the results of the comparison operations) to provide an analog average value which is fed to the analog input of the ADC. The measuring step of rejected claim 1 requires measuring the average voltages of the data signals themselves, whereas Sunter claims measuring the results of comparison operations. There is no such requirement in rejected claim 1. Clearly, the second clause of Sunter claim 1 fails to anticipate the measuring step of rejected claim 1.

In short, the averages measured in Sunter are for non-deterministic data, which is the result of comparing a non-deterministic digital output to a constant digital value. Without the predetermined data sequences required in claim 1, it will not be possible to deduce the signal parameters. The switching point voltage obtained by Sunter is a parameter of the ADC and not a signal parameter of any of the signals that are generated.

The Examiner relies on the third clause of Sunter claim 1 (col. 13, lines 35-38) to anticipate the deducing step of rejected claim 1. This clause is directed to a "digital averaging circuit" for averaging the first and second logic values (the results of the comparison operations) and generating a digital average value which is representative of the switching point voltage – the parameter of interest in Sunter. Again, rejected claim 1 calls for using the average voltage of the data signals themselves to deduce the signal parameter. Sunter does not measure the average voltage of data signals, but

rather the result of comparison operations to determined a characteristic of a circuit component, not required in rejected claim 1.

The Examiner also relies on the fourth full paragraph in column 6 of Sunter to anticipate the deducing step of rejected claim 1. The paragraph describes the function of the digital averaging circuit in more detail than Sunter claim 1. Accordingly the same comments apply.

In summary, claim 1 of Sunter does not mention generating data signal that consist of predetermined data sequences, measuring the average voltage of the generated data signals and using the measured average voltages to deduce the signal parameters of interest. There is no teaching or suggestion in Sunter that the method described therein can be used to deduce signal parameters of data signals, particularly high speed signals.

Clearly, Sunter does not teach "each and every element" as set forth in claim 1 and does not show "the identical invention" in as complete detail as is contained in the claim". Therefore , Sunter et al. cannot be considered to anticipate claim 1. Claims 9 and 10 depend from claim 1 and, therefore patentably distinguish from Sunter et al. for the same reasons as claim 1.

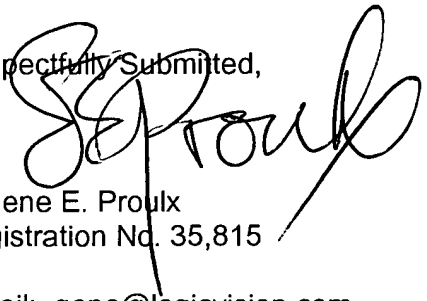
Claims 2 and 9-11 depend from claim 1 and, therefore, patentably distinguish over Sunter for the same reasons mentioned above. The Examiner asserts that "Sunter discloses a method for deducing parameters of data signals, the parameters being logic voltages and rise and fall times and comparing deduced logic voltages and rise and fall times values of a circuit input signal to determine circuit gain or frequency response". Applicants are unable to find any mention of rise and fall times, circuit gain or frequency response anywhere in Sunter, let alone col. 6, lines 12-25. Sunter uses the term "logic voltage" with reference of the logic voltage swing of the ADC under test, not in terms of a parameter of a data signal. Reconsideration is respectfully requested.

With regard to claim 2, Applicant is unable to find in Sunter any mention of signal parameters in the form of "logic voltages and rise and fall times" as asserted by the Examiner.

Claims 9-11 depend from claim 1 and, therefore, are patentable over Sunter for the same reasons.

Applicant believes and respectfully submits that amended claim 1 and dependent claims 2 and 9-11 are patentable over Sunter and that the application is in condition for allowance. Early favorable reconsideration and action to this end is respectfully requested.

Respectfully Submitted,



Eugene E. Proulx
Registration No. 35,815

e-mail: gene@logicvision.com
phone: 613-722-2051 ext. 240